

supply circuit and located in the control unit to isolate electrically the fire detecting system from the ship's electrical system.

(g) *Power supply transfer switch.* An automatic transfer switch with no "off" position shall be provided in the control unit for selecting the source of power, except that systems employing duplicate storage batteries may be provided with a manual transfer switch.

(1) *Automatic transfer switch.* Upon reduction of potential from the normal power source of 15 to 20 percent, the automatic fire detection system shall automatically be disconnected from the normal source and connected to the emergency source. Upon restoration of potential from the normal source of 85 to 95 percent of normal values, the automatic fire detection system shall automatically be transferred back to normal source.

(2) *Manual transfer switch.* Automatic fire detecting systems employing duplicate storage batteries as the power supplies shall be provided with a manual transfer switch with no "off" position to select the battery to supply the system and the battery to be charged.

(h) *Automatic fire detecting system, battery charging and control—(1) General.* Automatic fire detecting systems employing duplicate storage batteries as the power supply shall be provided with battery charging and control facilities as specified by this paragraph.

(2) *Transfer switch.* A manual transfer switch shall be provided in accordance with paragraph (g)(2) of this section.

(3) *Voltmeter and voltmeter switch.* A voltmeter and a voltmeter switch shall be provided at the control unit and connected to read (i) voltage of battery supplying system and (ii) voltage of battery on charge.

(4) *Ammeter.* An ammeter shall be provided to indicate the charging current to the battery on charge.

(5) *Reverse current protection.* An undervoltage or reverse current relay shall be provided to disconnect the battery on charge from the charging source in the event of loss of potential from the charging source unless reverse current flow is effectively blocked by a rectifier.

(6) *Resistors.* Fixed and variable resistors shall be provided to regulate the charging rate, together with a two-position switch to select between a normal charging rate and a high charging rate.

(7) *Overcurrent protection.* The batteries shall be protected against overcurrent by fuses rated at not less than 150 percent and not more than 200 percent of the maximum normal battery load.

(8) *Location.* The equipment required by this paragraph shall be located in or adjacent to the control unit.

[CGFR 56-39, 21 FR 9035, Nov. 21, 1956, as amended by CGFR 70-143, 35 FR 19666, Dec. 30, 1970; CGD 94-108, 61 FR 49691, Sept. 23, 1996]

#### § 161.002-12 Manual fire alarm systems.

(a) *General.* A manual fire alarm system shall consist of a power supply, a control unit on which are located visible and audible fire and trouble alarms, and fire alarm circuits as required originating from the control unit and terminating at manual fire alarm boxes. Power failure alarm devices may be separately housed from the control unit and may be combined with other power failure alarm systems when specifically approved.

(b) *Types.* Manual fire alarm systems shall be one of the following types, or a combination of several types:

(1) Manual fire alarm stations superimposed on and connected as an integral part of the fire detector circuit wiring of an automatic fire detection system.

(2) Electrical system using manually operated fire alarm boxes.

(3) Other types as may be developed.

(c) *Power supply.* The power supply shall be as specified for automatic fire detecting system by § 161.002-9.

(d) *Manual fire alarm system control unit.* The manual fire alarm system control unit shall be as specified for automatic fire detecting systems by § 161.002-10.

[21 FR 9032, Nov. 21, 1956, as amended by CGD 94-108, 61 FR 28292, June 4, 1996]